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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,412	12/05/2003	Robert P. Kusy	5470-286DV	9571
20792 7590 03/19/2007 MYERS BIGEL SIBLEY & SAJOVEC PO BOX 37428 RALEIGH, NC 27627			EXAMINER BUTLER, PATRICK	
			ART UNIT 1732	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
3 MONTHS			03/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/729,412	Applicant(s) KUSY ET AL.	
	Examiner Patrick Butler	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
 4a) Of the above claim(s) 1-7 and 21-41 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 8-20 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20031205</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-7, drawn to an apparatus, classified in class 425, subclass 106.
- II. Claims 8-20, drawn to a method, classified in class 264, subclass 480.
- III. Claims 21-41, drawn to a product, classified in class 522, subclass 182.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as in a method of cutting and stacking fiber as pieces rather than winding.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Inventions I and III are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this

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case the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product such as one with a composition that was cured by a means other than UV photo initiation and thus made with a composition without UV photo initiators. Alternatively, the product as claimed can be made by another and materially different apparatus such as an injection molding apparatus.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make other and materially different product such as one with a composition that was cured by a means other than UV photo initiation and thus made with a composition without UV photo initiators. Alternatively, the product as claimed can be made by another and materially different process such as an injection molding method.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is

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subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP § 821.04. **Process claims that depend from or otherwise include all the limitations of the patentable product** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of *In re Ochiai*, *In re Brouwer* and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to retain the right to rejoinder in accordance with the above policy, Applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

During a telephone conversation with Laura M. Kelley on 31 January 2007 a provisional election was made without traverse to prosecute the invention of Group II, claims 8-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-7 and 21-41 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "the step of molding" in lines 1 and 2. Claims 10 and 12 recite the limitation "the step of drawing" in line 2 and in lines 1 and 2, respectively. There is insufficient antecedent basis for these limitations in the claim. Claims 10, 11, and 13 are rejected via their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 9, 14-18, and 20 rejected under 35 U.S.C. 102(b) as being anticipated by Fernyhough et al. (US Patent No. 5,700,417).

With respect to Claim 8, Fernyhough teaches pultruding glass fiber roving through a resin bath, curing it (continuously pultruding a fiber-reinforced plastic article to form a fiber-reinforced plastic article having a first partial cured state) (see col. 1, lines 39-44; col. 4, lines 63-65), and winding it on a winder (continuously shaping the first fiber-reinforced plastic particle having the first partially cured state into a spirally wound

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shape) (see col. 1, lines 39-44; drawing). Since there are no steps required to occur between pultruding a fiber-reinforced plastic article having a first partially cured state and curing the fiber-reinforced plastic article having the first partially cured state, Fernyhough teaches this by the incremental curing of the product during the radiation exposure (see col. 1, lines 48-65).

With respect to Claim 9, Fernyhough teaches reshaping the rod from straight to curved by winding it on a winder (wherein the shaping step comprises a step of molding the fiber-reinforced plastic article on a rotatable mold) (see col. 1, lines 39-44; drawing).

With respect to Claim 14, Fernyhough teaches sending the coated roving under a UV lamps at a set speed (see col. 7, lines 54 and 55), which would necessarily apply energy at a substantially constant rate per length.

With respect to Claim 15, Fernyhough teaches that suitable energy sources for curing include electromagnetic radiation (see col. 1, lines 48-65).

With respect to Claim 16, Fernyhough considers UV and visible radiation to be unlike microwave and IR radiation because microwave and IR radiation have to be converted to thermal energy (see col. 1, lines 47-65). Thus, Fernyhough considers UV and visible radiation to be thermal energy.

With respect to Claim 17, Fernyhough teaches that the pultruding pulls coated glass fiber through a die to determine its shape and cures it (the pultruding step comprises the steps of shaping an uncured fiber-reinforced plastic; and curing the uncured fiber-reinforced plastic article to form the fiber-reinforced plastic article having a first partially cured state) (see col. 1, lines 39-44; col. 4, lines 63-65).

With respect to Claim 18, Fernyhough teaches using multiple energy lamps, and each lamp is a type of energy (wherein the step of curing the uncured fiber-reinforced plastic article comprises inputting a first type of energy into the uncured fiber-reinforced plastic article, and wherein the step of curing the fiber-reinforced plastic article having the first partially cured state comprises inputting a second type of energy into the fiber-reinforced plastic article having the first partially cured state) (see figure).

With respect to Claim 20, Fernyhough teaches using visible or UV radiation in the multiple lamps (see figure; col. 1, lines 47-65). As visible and UV radiation spectrums overlap, the teaching of visible radiation necessarily includes application of some UV radiation. Similarly, the teaching of UV radiation necessarily includes application of some visible radiation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10–14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernyhough et al. (US Patent No. 5,700,417) as applied to Claims 8, 9, and 17 above and further in view of Schäper (US Patent No. 4,464,121).

With respect to Claims 10 and 12, Fernyhough teaches a method of making a spirally wound fiber-reinforced plastic article having a second cured state as previously described. However, Fernyhough does not expressly teach drawing the fiber-reinforced

plastic article having the first partially cured state through a die having a cross-section to form a fiber reinforced plastic article having the first partially cured state and having substantially said cross-section.

Schäper teaches drawing a fiber-reinforced plastic between the spiral grooves of a stator and rotor to form the cross-sectional profile of the strand (drawing the fiber-reinforced plastic article having the first partially cured state through a die having a cross-section to form a fiber reinforced plastic article having the first partially cured state and having substantially said cross-section) (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Schäper's shaping spiral grooves with Fernyhough's process in order to form a spring with small tolerances of the shape (see Schäper, abstract).

With respect to Claims 11 and 13, Schäper's rotatable mold's spiral grove is part of the die (see abstract). Within the die, the fiber-reinforced plastic is hardened (cured) (see col. 3, lines 53-59). Since the fiber-reinforced plastic is curved (molded) and cured while it is drawing through the die, the steps occur contemporaneously.

With respect to Claim 14, Schäper teaches putting energy into the fiber-reinforced plastic article (see col. 3, lines 53-59) but does not appear to explicitly teach that the ratio of the energy input per unit length of the fiber-reinforced plastic article is within the claimed range (e.g., substantially constant).

However, in this regard, Schäper teaches adapting the speed of running the strand through, the resin employed, and the process temperature to each other (see col.

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3, lines 53-59). As such, Schäper recognizes that that the ratio of the energy input per unit length of the fiber-reinforced plastic article is a result-effective variable. Since that the ratio of the energy input per unit length of the fiber-reinforced plastic article is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum that the ratio of the energy input per unit length of the fiber-reinforced plastic article applied in the process of Schäper through routine experimentation based upon adapting the process variables cited above—the speed of running the strand through, the resin employed, and the process temperature.

With respect to Claim 16, Schäper teaches curing with thermal energy (see col. 3, lines 53-59).

With respect to Claims 18 and 19, as combined references, Fernyhough teaches UV radiation of the uncured fiber-reinforced plastic article (see col. 1, lines 39-44), and Schäper teaches thermal energy of the fiber-reinforced plastic article having the first partially cured state (see col. 3, lines 53-59). The UV and thermal energies are two types of applied energy.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mo.-Th. 7:30 a.m. - 5 p.m. and alternating Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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SUPERVISORY PATENT EXAMINER
3/16/07